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Linking datasets, people and resources

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The **PERSONAL SOCIAL SERVICES RESEARCH UNIT** undertakes social and health care research, supported mainly by the Department of Health, and focusing particularly on policy research and analysis of equity and efficiency in community care, long-term care and related areas — including services for elderly people, people with mental health problems and children in care. Views expressed in PSSRU publications do not necessarily reflect those of funding organisations. The PSSRU was established at the University of Kent at Canterbury in 1974, and from 1996 it has operated from three branches:

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Introduction

Over the past 15 years, researchers at the Personal Social Services Research Unit and the Centre for the Economics of Mental Health have undertaken numerous costs-related studies in community-based mental health care. Each study was designed to address costs and cost-effectiveness questions associated with supporting people with different mental health problems who are in different phases of their illness and who are supported by different community-based care services. We were interested to find out whether the sum of data from these studies was larger than its component parts; could we address broader mental health policy issues by amalgamating and re-analysing these data? In this paper we use the data to test the application of healthcare resource and benefit groups in mental health.

Within current health care policy there is a determination to discover how the NHS works and how health care can be better provided to clients. The recently introduced Performance Assessment Framework pulls together many of the previously collected and new indicators to measure progress towards nationally applicable targets. In turn, these data provide the information required by NHS Trusts and Health Authorities to implement initiatives such as National Service Frameworks and Health Improvement Programmes. The primary role of the NHS Information Authority is to develop the tools that will produce the information needed by the NHS. The development of Healthcare Resource Groups and Healthcare Benefit Groups – together forming the Healthcare Framework - has been an important component of this information strategy.

The Healthcare Framework was devised to assist in the internal management of NHS resources. Healthcare Benefit Groups (HBGs) are groups of people who have similar health care needs who are likely to have similar outcomes given the same package of care and are constructed to be clinically meaningful. Healthcare Resource Groups (HRGs) are sets of activities (procedures or interventions) that consume similar amounts of health care resources. There has been considerably more work undertaken on developing HRGs than HBGs. HRGs have been developed in relation to all inpatient episodes of care and encompass all diagnoses and are used to structure the National Schedule of References Costs for hospital services (NHS Executive, 2000). However, psychiatric diagnosis is a poor predictor of length of admission, a major cost-driver in hospital care (Sanderson et al., 1995). Length of admission is more likely to be dependant on other factors such as the patient’s own abilities, their support networks and especially on the availability of community-based services. Little work has been undertaken to date on developing the Framework for people with complex long-term care needs or for community-based services although the work has progressed in learning disability services (Comas-Herrera et al., 2000, 2001). A Mental Healthcare Framework will be complex for it must incorporate the demands made on services during rehabilitation and maintenance phases as well as acute episodes, and must recognise the social as well as clinical factors which contribute to mental ill health and its treatment.

This need for information that relates groups of people using non-hospital resources led directly to ideas for the re-analysis of the PSSRU/CEMH datasets on the cost and cost-effectiveness of community-based services. The development of community-based Mental Healthcare Resource Groups requires statistical analysis of a large number of cases, and their scope and reliability needs to be tried out for as many types of health care interventions and mental health service contexts as possible. The PSSRU/CEMH datasets provide complex needs, service and cost data for clients supported in a variety of care environments allowing preliminary work in this area.

Designing the linked dataset

The first task in developing Mental Healthcare Benefit and Resource Groups (MHBGs and MHRGs) was to locate the relevant research datasets and within those, to identify the components of a cross-walking dataset. Our focus was on people who have severe mental health problems, predominantly those with schizophrenia and related disorders. Initially, the datasets for eleven studies were identified comprising a total of 3677 people. The studies ranged from large evaluations of community-based care for people who had left long-stay psychiatric hospitals to smaller studies of employment or outreach services for people with mental health problems. The studies were all carried out in the late 1980s and 1990s.

The final linked dataset was planned so that it would include variables describing four major assessment domains: demographic details on each person such as age and gender; reliable diagnostic information; information about psychological state and severity; and information about social functioning and physical disability. Four risk-related variables were also identified: recent aggression; recent attempted suicide or self-harm; history of violence, arson, abuse or harassment; and involvement with the police. The selection of variables also took into account work undertaken to develop the Minimum Data Set for mental illness, the work on the Matching Resources to Care (MARC) system and variables that have been shown to be reliable predictors of cost (Knight et al., 1998; Schneider et al., 1998).

The dataset for each separate study was explored to ensure not just that measures for each of these domains were present but also to find out whether the variables comprising each domain (for example, daily living skills in the social functioning domain) were assessed in a broadly comparable manner. Each dataset also contained information about use of services and other supports and their associated costs. As PSSRU or CEMH researchers undertook this part of the studies the measurement and estimation procedures were known to follow the same methodology. A version of the *Client Service Receipt Inventory* (CSRI; Beecham and Knapp, 1992, 2001) was used in all but one of the projects so we could be confident that observed costs differences were due to differences in resource use rather than data omissions or cost estimation errors. The exception was the Residcare project in which the postal survey incorporated a ‘reduced list’ CSRI. This approach reduced the data collection burden but ensured that at least 94 per cent of the total support costs would be captured (Beecham and Knapp, 1993).

The work undertaken to design the linked dataset was essentially iterative rather than sequential, with data exploration driving amendments and adjustments to the initial design. At the end of this stage of the work, eight datasets had been identified as containing the 40 core variables required for the work, plus service and costs data (Schneider et al., 1998).

Linking the data

Building the linked dataset was a complex task as the eight studies used a variety of different assessment schedules. The methodology is briefly described here and full details can be found in Mummery et al., (1999). Using SPSS, variables were present or created to reflect a set of reference data. These identified the case number, project (for example, Compther, NI; see Box 1), interview date, the interview point in months from entry-to-study, and where relevant, whether the case belongs to an experimental or control group. Box 1 also shows the number of people included in the final linked dataset; a potential sample for analysis of 3342 people. As far as possible, information from all time periods at which data were collected was retained in the linked dataset but only the data collected at 12 months after entry-to-study was used in the analysis and findings reported below. This would ensure the greatest number of clients could be included in the current analyses and that the assessments would reflect a notional ‘steady state’ in people’s mental health and resource use.

The second set of variables to be standardised was the demographic data. These included age, marital status, sex, type of housing, geographical location, employment status, mental health act status, ethnicity, number of admissions to psychiatric hospital, percentage of life spent in psychiatric hospital, and years of formal education. With the exception of the last variable, these data were available in at least five of the eight datasets included.

The service use and cost variables were then explored. A variable was created to indicate whether a service had been used over an equivalent period prior to the interview. The variables identifying the cost of each person’s service use (which incorporate both frequency and duration of service use) were then adjusted to reflect average costs per week in 1996-97 prices using multipliers from the health and social services price indices and the retail price index (Netten et al., 1998). Costs for individual services were retained in the linked dataset but costs per person were also summed into sets of services. Cost sub-totals were calculated for seven mutually exclusive service sets, identified on the basis of the service location (hospital or community), whether they were specialist or generic services (that is whether they were available to only those people who had specific problems or to all people), and the provider agency (for example, NHS Trust). The seven sets are:

- Accommodation and living expenses;
- Hospital services (inpatient, outpatient, and accident and emergency);
- Specialist mental health services (psychiatric nurses, psychiatrist, psychologist, intervention programme such as the DLP or MOSST);
- Community health services (general practitioner, optician, dentist, chiropodist);
- Criminal justice services (probation, police, prison, lawyers/solicitors);
- Social care services (social worker, employment services, education classes); and
- Day activity services (provided by social services departments, health or independent sector organisations).

The greater challenge in bringing together the separate data sets was in assessing consistency across the studies in the scales measuring abilities in activities of daily living, behaviour, social functioning and mental health state.

For daily living activities, data were available in four of the eight studies - NTRHA, NI, Residcare and MOSST. To standardise the measures across the datasets, each area of daily living activity was re-coded as an indicator variable; 1 = the person can function independently or requires minimal support; 0 = the person cannot function or requires high levels of support. The four studies all had information on abilities to shop for personal items, prepare simple snacks, do their own laundry, keep their own personal space clean, use public/own transport, manage a weekly allowance, get themselves up on time, engage in activities, maintain personal appearance, and mix with other people. In addition, a composite variable was created for the Thomas study to rate whether a study member could undertake personal care tasks such as washing, bathing, shaving, and keeping their personal space clean.

Variables describing the behaviour of study members were identified for participants in all of the studies except Compther. These covered behaviour relating to: self-harm or suicidal thoughts or actions; drug or alcohol abuse; phobia, panic attacks or anxiety; over-activity or restlessness; under-activity; depression or weeping; destruction of property; hostility or aggression to other people; mood disturbance or mood swings; cognitive impairment; and inappropriate sexual behaviour. A number of tests were undertaken to assess re-coding possibilities resulting in the selection of a simple dichotomous variable; 1 = the behaviour is present in moderate or severe form; 0 = no or minor problems with this behaviour. An indicator variable for physical illness or disability was also calculated.

The final set of variables considered were those relating to mental health state and psychiatric symptoms. A diagnosis variable describing seven distinct categories was available for all studies but we also wanted the linked dataset to have the capacity to test whether symptoms lying within each diagnostic category would prove helpful in distinguishing health care resource groups. The *Present State Examination* (PSE; Wing et al., 1974) was used in two studies and the *Brief Psychiatric Rating Scale* (BPRS; Overall and Gorman, 1962) was used in two. A further two studies used both schedules. The Residcare study assessed mental health with the *Health of the Nation Outcome Scale*. Our preparatory analyses identified five variables from the PSE; presence of delusions and hallucinations, presence of specific neurotic symptoms, presence of non-specific neurotic symptoms, behaviour speech and other score, total score. We could consistently measure two variables from the BPRS across the studies in which this schedule had been used; total score and an adjusted total score that would standardise the raw total score for the different number of items employed in the studies. In addition, a global functioning score could be derived for five studies.

Each of the eight datasets comprising the final linked dataset was originally developed to evaluate the costs and relative cost-effectiveness of service provision for people with mental health problems. Despite the similarities between this and the primary purpose of the current work, the tasks necessary to link these datasets were far from straightforward. They ranged from the identification of a common set of dimensions and domains through to re-coding and careful ‘calibration’ of the new variables. The final linked dataset contains 90 variables (including the service and costs data) for 3342 cases. The next task in this work, the data analysis, sought to address three broad issues:

- the identification of groups of clients with similar needs (MHBGs);
- the identification of groups of people using similar resources (MHRGs); and
- the identification of groups that take into account both MHBGs and MHRGs.

The identification of groups of clients with similar needs (MHBGs)

The first step towards deriving mental health benefit groups (MHBGs) was to ascertain the distribution of the variables. The aim was to reduce the dimensionality of differences between people sufficiently to allow the identification of distinct groups of people. Problematically, if too many groups were identified the results would be difficult to use in practical resource allocation scenarios. Too few groups, however, and the complexity of working with people with such diverse support needs would not be reflected. This initial laying out of the sample’s dimensions was undertaken to ensure that the distribution of differences along some very basic criteria was not too wide and to ensure that small groups of ‘outliers’ would not distort the picture for the whole sample.

This preliminary analysis showed that 92 per cent of the sample was unemployed, 89 per cent were not formally detained under the Mental Health Act and 83 per cent were white. Given the high frequency of these characteristics, the sample was reduced to only those people that fell into these categories. A further identifying variable was uncovered - the type of accommodation in which people were living. About half of the sample was living in some larger staffed accommodation facility (residential or nursing care, hostels, etc.). The analyses below concentrate on this population, as it is likely to include the more expensive groups of people to support. Sample members now came from the Residcare study (n=1386), NTRHA (n=122) and NI (n=145). In addition, 23 people from the other studies met these initial criteria. Further work would be required to repeat the analysis for those people living independently or with their families.

Exploring each domain

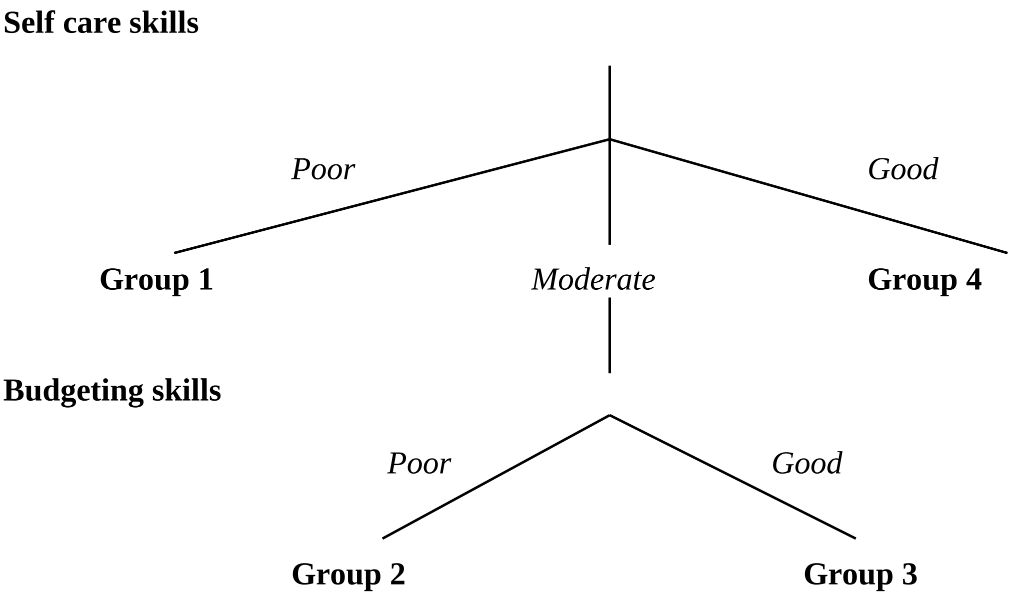
Having selected the broad parameters of the sample, the next task was to examine more closely the variables within each domain (demographic characteristics, activities of daily living assessments, and those relating to behaviour or mental health symptoms). Initially, each set was explored separately using factor analysis to try and reduce the complexity of the data. After some preliminary work, we decided to exclude the variables describing clients' mental health status. The different schedules employed tend to measure slightly different facets of symptoms of mental illness and we could not ensure comparability across studies, particularly given that for many people we only had total, rather than component scores.

A straightforward factor analysis identified five groups of people by their abilities to undertake activities of daily living (ADL). These related to skills in the following areas:

- **action** = shopping, transport, preparing snacks (total score divided by 3);
- **social** = conversation with staff or residents and social mixing (total score divided by 3);
- **appear** = keeping room tidy, maintaining personal appearance, and doing laundry (total score divided by 3);
- **time** = getting up and using time (total score divided by 2); and
- **money** = budgeting.

A further factor analysis on these five variables grouped them into three: **social**, **money** and all the rest of the variables as one group. This last group, relating to self-care was renamed **self**, calculated as (**action** + **appear** + **time**)/3. Histograms showed that **social** and **money** remained essentially dichotomous but that **Self** had a wider spread due to the inclusion of a greater number of component variables. **Self** was found to split into three values; low/poor self-care skills, moderate/average, or high/good self care skills. The variable for socialising skills was re-coded: 0 = little or no skills or 1 = some skills. Similarly the variable describing ability to handle money was re-coded: 0 = unable to budget; 1 = can budget. The cluster centres are given in table 1. These results suggest a 'tree' structure for assessing and grouping people (see figure 1).

Figure 1 Tree structure for the activity of daily living groups



Socialising skills (**social**) did not appear as an important variable in distinguishing groups of people but those with high levels of abilities in this area fall mostly into **Group 4**.

Again using factor analysis, a similar process of reducing the complexity of the data was undertaken for the variables relating to behaviour. These could be reduced to three groups of behaviours relating to self-harm, mood/depression and cognitive impairment. Each resulting variable was then re-coded as 0 = no/minimal problems relating to this behaviour and 1= presence of problems relating to this behaviour. The subsequent analysis produced only five groups of people, with self-harm emerging as an important distinguishing variable. The groups are as follows.

- B1: no self-harming behaviour, no mood/depression and no cognitive impairment.
- B2: no self-harming behaviour or problems associated with mood/depression but has cognitive impairment.
- B3: no self-harming behaviour, shows problems associated with mood/depression but has no cognitive impairment.
- B4: no self-harming behaviour, shows problems associated with mood/depression and cognitive impairment.
- B5: shows evidence of self-harming behaviour.

Finally, there were four demographic variables remaining in the dataset; age, sex, marital status, and percentage of life spent in psychiatric hospital. Sex and marital status were re-coded to dichotomous variables (1 = male, 1 = currently married). The distribution of the variable describing the percentage of life in hospital was also found to fall into two groups and was re-coded depending on whether the person had spent more than ten per cent of their life in hospital or less. The age variable was grouped in the following bands; under 30 years old, 30 to 45 years old, 45 to 60 years old, 60 to 75 years old, and 75 years or older.

Combining the dimensions to identify MHBGs

In this way the data were reduced to eleven variables (see table 2). When grouping cases by these variables we found many of the potential cells were empty or contained a very small percentage of people. Even so, the analysis identified eight viable groups and table 2 shows some clear trends that fit known patterns of health and abilities among people with mental health problems. For example, the composite variables describing activities of daily living skills show deterioration as people get older. This trend is particularly noticeable for self-care skills (**self**) among people over 60 and for self-care and budgeting skills (**money**) among people over 75 years old. The variable describing social skills is more stable but the skills do decrease markedly for people over 75 where the scores are well above the average for the full sample. For the behaviour-related variables the pattern is more complex but cognitive functioning (**cognitive**) decreases with age and there is a slight trend for symptoms of mood swings/depression to improve as people get older. There is also an increase in aggressive behaviour (**aggression**) in older people who have spent less than ten per cent of their life in hospital. Generally, people who have spent more than ten per cent of their life in hospital are less able in each of the activities of daily living and are more likely to have behaviour problems.

As table 2 shows, combining demographic, activities of daily living and the behaviour-related variables produces some very precise definitions for groups of people (MHBGs); perhaps too precise to be of use in the normal run of internal and external resource allocation procedures. For example, the fourth age band in table 2 allows us to identify people who were aged between 60 and 75 years who had been in hospital for less than ten per cent of their lives who had moderate self-care problems and were unable to handle money. They would be unlikely to self-harm or be aggressive. Of course, other variables will be important for practitioners, for example, the client’s sex is important when selecting the right placement in congregate living environments or when providing personal care. Similarly, whether a client is currently married may have an impact on the level of contact they have with family members and the support received from this source. MHBGs, however, are not intended for use as a clinical decision-making tool.

In order to try and reduce the dimensionally still further, the demographic variables were dropped from the analysis. There were a number of reasons why this was felt to be a feasible approach. First, there were similarities in the activities of daily living and behaviour scores for people under and over 60 years old. Second, a common service distinction is made between people who use ‘adult’ services (under 65 years) and older people’s services (over 65 years). Third, people who have spend long periods of their life in hospital are seen as an administratively separate group in many authorities as their community accommodation was originally funded through transfers of resources from the old long-stay psychiatric hospitals.

The analysis based solely on the behaviour variables produced five groups of people, (see above). These groups were then analysed in conjunction with the activities of daily living variables (signified by the letter A). Although combining these variables would in theory produce 20 groups, the proportion of people in some of the groups was as low as two or three per cent. The final analysis distinguished seven groups.

- People who self harm (B5).
- People with cognitive impairment (B2).
- People with severe/moderate self-care problems who have poor abilities in handling money (A3).
- People with moderate self care skills who handle money well but have behavioural problems (A21).
- People with moderate self care skills who handle money well and who do not have behavioural problems (A20).
- People with few or no self care problems that have behaviour problems (A11).
- People with few or no self care problems that have no behaviour problems (A10).

In the above groupings, the B codes denote behaviour groups. A1, A2, A3 indicate the ADL groups and the extra 1 or 0 indicates the presence or absence of other behaviour problems (mood swings and/or aggression). Thus, groups A3, A21 and A11 have greater problems in more areas than any group below them and people in A20 are less disabled than any group listed above them. However, people in the A20 group are not necessary ‘worse’ than A11 since people in A20 score less well in self-care skill but better in the behavioural problems category.

To reduce the number of behaviour or daily living variables any further would have meant substantial losses in terms of the homogeneity of the groups and differences between the groups. Thus the groups identified above continue to illustrate the complexity of the needs of people with mental health problems. Mental health problems can affect people across a wide range of dimensions of welfare (broadly defined) and while some dimensions may show severe deterioration, others will be unaffected or show only slight changes. In order to facilitate community living, health and social care services must respond differentially to a range of need indicators.

The identification of groups of services and costs bands (MHRGs)

The second analytic task was to explore the data on service use and costs for associations that would help distinguish mental health care resource groups (MHRGs). The individual service receipt and cost variables and the costs for the five service sets were extensively tested using factor analysis. The costs for the service sets were found to lead to the sharpest divisions arriving at four groups.

- People with high social care costs (greater that £60) - essentially higher users of social work services (**serveuse1**).
- People with low social care costs but with high costs associated with use of day activity services (**serveuse2**).
- People with low social care costs and low day activity costs but with high (greater than £85) hospital costs (**serveuse3**).
- People with low costs in all service sets (**serveuse4**).

The costs associated with the set of community-based mental health services was not a clear grouping variable but these costs were high for people in **serveuse1** (high social care costs) and **serveuse3** (high hospital costs).

Combining MHBGs and MHRGs

The first set of analyses looked for associations between the groups derived from the service set costs (**serveuse**; MHRGs) and both the demographic-ADL-behaviour MHBGs and the ADL-behaviour MHBGs. This approach was not very successful as only the cost variable **serveuse4** showed any 'grouping' potential as the score for the demographic, ADL and behaviour variables were close to the average for the whole group. Subsequent analyses looked for associations between total costs and the MHBG components.

These analyses met with some success in that although the results were robust, fewer domains and measures could be incorporated. The only variables that were found to correlate consistently with the total costs of care were the variables identifying the level of self-care skills (**self**) and the percentage of a person's life spent in hospital. Although this leads to a clear definition of groups of people and the likely resource consequences, it does reduce the amount of complexity that can be incorporated into this Mental Healthcare Framework. These two variables enabled six groups to be defined, see also table 3.

Group 1 People who have no problems with self-care and who have spent less than 10 per cent of their life in a psychiatric hospital; average total cost per week £257.

Group 2 People with moderate self care skills who have spent less than 10 per cent of their life in a psychiatric hospital; average total cost per week £284.

Group 3 People who have very poor self care skills who have spent less than 10 per cent of their life in a psychiatric hospital; average total cost per week £293.

Group 11 People who have no problems with self-care and who have spent more than 10 per cent of their life in a psychiatric hospital; average total cost per week £350.

Group 12 People with moderate self care skills who have spent more than 10 per cent of their life in a psychiatric hospital; average total cost per week £388.

Group 13 People who have very low self care skills and who have spent more than 10 per cent of their life in a psychiatric hospital; average total cost per week £413.

In addition, and following the results found in the earlier MHBG analyses, two further groups were separately identified, people who self-harm (**B5**, n=128, average weekly costs £302) and those who are cognitively impaired (**B2**, n=265, average weekly costs £319). The analyses exclude the 37 people who self-harm and who are also cognitively impaired and a further 147 people with missing data on some of the cost variables.

Tables 3-5 provide more detailed information on the costs associated with these groups of people. Table 3 shows that total costs increase moving from Group 1 to Group 13. Noticeably, people who have spent more of their life in hospital have higher total costs, a finding that holds constant at all levels of self-care skills. Indeed, people who have spent more of their life in hospital and who have good self-care skills are more costly to support overall than are people who have poor self-care skills but who have not spent so much of their life in hospital.

As all sample members lived in staff supported congregate living environments it is not surprising to find that total costs are dominated by the accommodation-related costs.

Although we cannot distinguish different types of accommodation or different levels of support provided within them, these costs show similar associations to the MHBGs as the total costs. Total and accommodation costs for the groups of people who self-harm or who are cognitively impaired fall between Group 3 and Group11.

There is little variation between the groups in terms of the costs of service sets (tables 4 and 5) however it is worth briefly mentioning the two major cost components: recent hospital inpatient care and day care services. There is a tendency for average in-patient costs to rise as self-care skills reduce and for people who have spent less of their life in hospital to have higher inpatient costs (table 4). It is likely that the lower accommodation-related costs for these groups are indicative of lower levels of on-site support and thus fewer staff to cope with variations in people's mental ill health. Day care services absorb a high proportion of community costs and a further slight trend for people who have spent less of their life in hospital to make slightly higher use of day care services.

Conclusion

There are a number of limitations to this work. First, although our original sample was more than 3000 people, the mix of research tools employed in the original studies to measure needs, behaviour etc., meant that insufficient comparable data on each person reduced the sample by about two-thirds. It may be that data from a larger sample using more consistent measures would produce different results. It is also important to remember that the data on psychiatric symptoms were not employed in these analyses. Yet for people who are in acute phases of their illness and who are receiving community-based support, severity of symptoms is likely to be a major factor in producing a Mental Healthcare Framework. On a more positive note, measures of mental health symptoms can often only be used by trained psychiatric professionals. By excluding these measures, it is likely that a wider group of medical or social care staff can use the groupings. Although these analyses focus on people with severe mental illness, predominantly schizophrenia-related disorders, they only consider people who are living in specialist staffed accommodation. MHRGs and MHBGs for people living independently or in their family homes may look very different. Finally, we need to be aware that the research studies that provided the data for this work were carried out over a period of some 15 years and services have developed considerably over that period, and subsequently. The full impact of the National Service Framework for mental illness has yet to be felt in most localities but is likely to further change the supply of services. In turn this may affect the way people use services and the costs of support (MHRGs).

Limitations aside, some of the findings from this work are very powerful and provide some of the first evidence for a Mental Healthcare Framework for community services. First our findings suggest that despite individual variations, mental health care benefit groups can be identified using a few fairly simple measures. Demographic characteristics and broad assessments of skills in activities of daily living and behaviour can identify groups of people who have similar needs. In the last group self-harming behaviour, cognitive impairment, mood swings, depression and aggression are important factors. The ability to handle money, the ability to socialise and self-care skills are also important. It is only this last variable, alongside psychiatric history that showed any association with use of resources.

The work described above certainly shows that the development of a Mental Healthcare Framework for community-based mental health care is a complex matter. These findings reinforce concerns about using diagnosis as the sole measure of mental health benefit and resource groups as the underlying characteristics, skills and behaviours have a large part to play in linking people and resources.

Acknowledgement

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Box 1 Short titles and focus of each research project included in the database

Compther	A controlled trial of compliance therapy which aims to overcome non-adherence to medications regimes in patients with psychosis. N=72, study period 18 months.
DLP	RCT evaluation of the Daily Living Programme which aims to support people in with severe and acute mental health problems away from hospital. N=189, studied over two years. Data collected at 5-11 months is recorded as 12 months, data collected at 12-20 months is recorded as 18 months.
Greenwich	A controlled study of an intensive psychiatric nursing intervention for people with severe mental health problems, N=79 studied over 18 months.
MOSTT	A study of the Maudsley Outreach Support and Treatment Team providing support for people who find it difficult to use traditional models of service provision. N=26, study period 12 months.
NI	An evaluation of community services for people leaving six long-stay hospitals in Northern Ireland. N=145 people assessed one year after discharge.
NTRHA	An evaluation of community services for people leaving two long-stay hospitals in North London over eight years. N=756 people assessed one and five years after discharge.
Residcare	A cross-sectional study of 368 residential care facilities in seven areas of England and one in Wales. 1951 people were living in these facilities on the census day.
Thomas	A cross-sectional study of people with schizophrenia living in South London who had been discharged from hospital (brief admission) or the crisis intervention team. N=124, data collected one year after discharge. No baseline data were collected.

Table 1 Cluster centres for the grouped activities of daily living variables

Self	Money	Social	No. cases
.0991	0	.2470	494
.3224	0	.0310	463
.4037	1	.0567	754
.8047	.9758	.7930	372

Table 2 Combining grouped variables

Group	Age	% life in hospital	Male	Married	Social	Self	Money	Mood	Aggression	Harm	Cognitive
Less than 10% of life spent in hospital											
Young	<30	3	.66	.05	.12	.19	.43	.34	.16	.11	.13
	30-45	3	.69	.20	.18	.22	.46	.29	.14	.08	.11
	45-60	2	.63.	.44	.15	.28	.43	.32	.18	.09	.15
	60-75	2	.57	.51	.22	.40	.44	.28	.15	.04	.26
Older	>75	4	.28	.64	.39	.66	.72	.27	.23	.03	.37
More than 10% of life spent in hospital											
	30-45	24	.49	.07	.23	.35	.60	.40	.31	.06	.19
	45-60	17	.58	.19	.22	.40	.63	.32	.28	.04	.20
	65-75	13	.48	.23	.29	.47	.60	.30	.23	02	.25
Average	45-60	7	.55	.33	.22	.35	.50	.30	.20	.06	.20

Table 3 Combining resource and benefit groups

Group[1]	Hospital £ per week	Community £ per week	All services £ per week[2]	Accomm. £ per week	Total £ per week[3]	Number in group
1	16	41	57	200	257	420
2	23	40	63	221	284	163
3	22	30	52	241	293	145
11	11	45	56	294	350	115
12	9	39	48	340	388	90
13	17	30	47	366	413	102
S-H[4]	37	37	74	227	302	128
C-I[5]	15	37	52	267	319	265

Notes:
1. **Group 1** No problems with self-care, less than 10 per cent of their life spent in a psychiatric hospital. **Group 2** Moderate self care skills, less than 10 per cent of their life spent in a psychiatric hospital. **Group 3** Very poor self care skills, less than 10 per cent of their life spent in a psychiatric hospital. **Group 11** No problems with self-care, more than 10 per cent of their life spent in a psychiatric hospital. **Group 12** Moderate self care skills, more than 10 per cent of their life spent in a psychiatric hospital. **Group 13** Very low self care skills and who have spent more than 10 per cent of their life in a psychiatric hospital.
2. All services includes the costs of hospital and community-based services (the two previous columns).
3. Total cost includes the costs presented in the previous four columns (all services plus accommodation costs).
4. People who self-harm.
5. People who are cognitively impaired.

Table 4 Costs for hospital services

Group	Out-patient £ per week	In-patient £ per week	Total hospital £ per week	Number in group
1	7	9	16	420
2	7	16	23	163
3	6	23	22	145
11	4	7	11	115
12	4	5	9	90
13	4	13	17	102
S-H[1]	7	30	37	128
C-I[2]	4	11	15	265

Notes
1. People who self-harm.
2. People who are cognitively impaired.

Table 5 Service set costs for community-based services

Group	Com' health £ per week	Mental health £ per week	Social care £ per week	Day care £ per week	Total community £ per week	Number in group
1	1	4	10	26	41	420
2	1	4	7	28	40	163
3	1	4	4	21	30	145
11	2	7	13	23	45	115
12	2	3	10	24	39	90
13	1	3	6	20	30	102
S-H[1]	2	6	6	18	37	128
C-I[2]	2	3	9	24	37	265

Notes
1. People who self-harm.
2. People who are cognitively impaired.